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ABSTRACT

Regardless of favorable advertising and publicity, it is not presently clear that schools should rush to purchase microcomputers for instructional use in classrooms. In regard to instructional questions, much research is needed to determine the effectiveness of the computer under varying classroom conditions. Additional questions needing resolution before computers are purchased include the following: (1) Can the school offer enough computers to insure that each child has adequate time with the machine? (2) Can the school purchase enough software to provide adequate variety so teachers may select learning experiences to meet the needs of each child? (3) Should all teachers become computer literate? (4) Should students become computer literate? Schools should be sure they can afford a microcomputer system and its accompanying software without draining already-strained budget items. Purchases that sacrifice other areas, thereby lowering the quality of instruction, are not acceptable. Clear objectives must be established in the integration of the microcomputer and its accompanying technology. Proper teacher training in use of the equipment and preview of software is imperative. Rational planning in the initial stages can help prevent irreversible decisions that can waste resources and reduce the quality of the teaching/learning environment. (RH)

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Don't Get Trampled in the Computer Stampede

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Mrs. Jones, a third grade teacher, can hardly wait until the new microcomputer is delivered to her school. She has read many glorious reports concerning miraculous learning experiences when students have access to this machine. Her excitement has spread to her 30 students and has even filtered to the homes where several parents have inquired about the new learning device. Many of her other 20 teaching colleagues are also excited and are inquiring of the principal and the director of the media center concerning the anticipated arrival of this acclaimed teaching machine. The school board and administration of the school system have made the attainment of computers in all schools a number one priority. Is this unbridled enthusiasm to be applauded or might we be rushing to become part of the stampede and getting trampled in the process.

Most articles in educational journals have painted glowing pictures of the teaching strength of this machine, and salespersons and manufacturer's literature have certainly exploited this position. Where children have maintained continuous use of quality software meeting their individual needs, outstanding progress has been made. But the question of long range success in the real world of public education still begs an answer.

At the present time many public schools may be throwing caution to the wind and plunging forward in a frantic effort to prove themselves contemporary by attempting to provide some form of computer education for all students. Observing the mad rush to assure computer literacy

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on a mass scale has caused some knowledgeable individuals to wave a red flag and to urge more prudence in assimilating this onrushing technology. Instead of enhancing the learning environment for the public school student, this new technology may indeed detract from his progress.¹

In the not too distant past we may recall the celebrated initiation of television into the educational setting. Although television is still recognized as a viable instructional alternative, it has not been the panacea that early visionaries would have led us to believe. Much money and time was dedicated to make this medium a major thrust in our schools. The dusty television sets that haunt the closets of many of our schools provide evidence to the utilization of this medium in our hasty charge to remain in vogue.

Programmed instruction was another heralded innovation predicted to revolutionize education. Like television instruction, it is now recognized as another means of instruction, not the impeccable remedy envisioned by quixotic experts.

At the Tennessee Forum on Educational Excellence at Vanderbilt University Dr. David L. Robinson, who is the executive vice-president of the Carnegie Corporation of New York, expressed his belief that many computer courses may be a waste of time. He stated that to assume a bright future in the sophisticated fields of computing may be misleading. Many programming skills now being taught may be obsolete in the near future.

Much research is needed to determine if the computer will function as an academic change device. Preliminary results indicate positive learning response under specific conditions, but much attention is needed

to determine its effectiveness under varying conditions that exist in the classroom setting. Factors such as distracting noise, time on task, computer response time, student eye strain, and teacher attitudes have received little attention. Various educational computer programs have been developed to entertain while teaching using noise as an attention device. However, these noises may create distractions for those students not involved with the computer and certainly could be a nerve stimulus for the teacher. The microcomputer is being viewed by many as the answer to an individualized instructional program. Since time on task has been shown to be a variable closely correlative with achievement, the question might be asked^{as to} how much drill and practice time will be available for thirty students in ratio to one or two computers? The next factor mentioned, computer response time, needs to be studied to determine the ideal response time for student motivation, attention, and academic achievement. Some program response time is time lagging which may create student frustration. When considering microcomputer education for young children, much consideration should be given to the length of time these children are assigned or allowed to work on the computer. Characters on the computer may contribute to eye strain, because the near vision of children at the age of 6 and below has not developed well enough for them to deal effectively with the small characters.²

Perhaps it is time we pause and take a long, rational look at this phenomenon that is pressing upon us. What are the realities of utilizing this technology on a down-to-earth, day-to-day basis? Are the sometime glorious claims true or are they part of a mass conspiracy to profit the manufacturers and temporarily satisfy the public's demand for

some type of visible progress in educational endeavors? The answers are probably somewhere between these extremes.. Let's examine some of the considerations that may affect the success of this new technology being interjected into our schools.

Evidence indicates that the computer is an effective learning device. When children have extensive access to the microcomputer, using materials that are educationally sound and that meet their individual learning needs, the computer proves to be an excellent learning device.

Before the integration of computer technology into an educational environment, there are several problems that might be addressed.

Potential Problems

- A. Can the school offer enough computers to insure that each child has a liberal experience with the machine?

If a classroom of 30 students had a computer for daily use, it would still mean that student/machine contact time would be limited. An analysis of a computer system costing \$2,250.00 (with limited software) would indicate that each student would average one hour on the machine every six days. This is assuming the machine is used five hours a day, 150 days a year. Considering a school with 600 students and 20 self-contained classrooms, it would mean that 20 computer systems and accompanying software would be needed to provide a meager experience for each student in contact with the computer. This would also indicate an initial cost of \$45,000.00 in providing a minimum experience for the students in this school. For most schools this is an unrealistic plan.³

Many schools may resort to purchasing one or two computers for each school with limited accompanying software. Although this is totally inadequate in providing each student with a viable learning experience,

it is feared that other segments of the school program may suffer drastically. A large amount of this expenditure will probably be taken from the equipment and materials budget of that school. The effects of this budgeting priority could cause havoc in other aspects of the instructional program. The school may cease to replace filmstrip projectors, 16mm projectors, and other equipment. Learning materials such as new books, filmstrips, and tapes may be greatly restricted. Teachers' materials such as duplicating paper and duplicating fluid, transparency film, and laminating and dry mounting supplies may receive critical cut-backs. In short, it is feasible that progress and maintenance in the area of educational media may all but cease. What have we gained by this trade off?

We now have two learning machines that can only be used one at a time by individual students, but we have lost various learning approaches that are flexible enough to be utilized by individuals as well as large groups. A sacrifice has been made to secure a machine where a teacher has little or no direct control over the learning experiences of the child. The educational wisdom of this sacrifice can certainly be questioned.

- B. Can the school purchase enough software to provide adequate variety so a teacher might select learning experiences to meet the need of each child?

Software is expensive with even modest programs costing in excess of \$30.00. The purchase of software may be expected to run three times the cost of hardware. Of course a school can share software between computers, but still this is a substantial expenditure on an initial basis and must certainly be considered on a continual basis. Much software is

also of questionable quality. Reports indicate that a careful evaluation and selection process should be conducted before purchase is made. Many schools have purchased hurriedly developed "drill and practice" software that is no better than a workbook or flash cards. "Good" software should respond much the same as a "good" teacher.⁴

C. Should all teachers become computer literate?

Many feel that a massive push should be made to ensure that all teachers become computer literate. Some of this group express a need for teachers to develop programming skills enabling them to develop their own instructional materials. Conceding that some teachers may be highly motivated with this new technology, it is unrealistic to assume that, in general, teachers will desire programming skills or really need them. Actually, a push for programming skills that are of questionable use may result in neglect of other more important considerations in the learning program such as planning for meaningful instruction and integration of learning materials to meet group and individual needs.

Learning a programming language and using this language to create quality programs is a time consuming task. Programmers are technicians possessing developed skills that require patience and attention to detail. Quality programs require a total commitment of time and effort with pre-testing of materials a necessity.⁵ It is doubtful that many teachers have the time or interest to pursue this arduous task. A new software package written in BASIC will contain approximately 24K (24,000 characters), or about 1,200 program statements. A trained programmer may be able to write 50 usable 20-character lines a day. At this rate, the 1,200 program statements would take approximately 192 hours, or 24 work days of eight hours each. This calculation does not include the time

needed to write, test, and debug the program.⁶

A more productive use of teacher time would involve evaluation of applications software and its integration into a planned continuity of learning. Schools must examine software carefully and assist teachers in using the materials at appropriate times in each learner's progress. Teachers must be given released time and proper criteria guides to perform the important function of recommending materials for purchase.

D. Should students become computer literate?

When you give adults an unfamiliar gadget, they'll look at it and think, "My God! I'll break it!" But a kid will look for the on/off switch.⁷

Students need to be aware of how the computer affects our daily lives and to experience the various modes of learning using this new technology. They need to experience hands-on experiences that lead to reduced anxiety and increased motivation to use the computer in its varied capacities. Highly motivated and capable students should be given the opportunity to pursue their interests. This can be accomplished in most schools by having various programming languages. Larger schools may have enough interest to develop computer classes and promote computer clubs. For the majority of students it seems more realistic and desirable to make students aware of the influence of the computer on our daily lives, to instruct them in basic computer terminology, and to teach them basic skills in using the computer with applications software. If most students in a school can reach this level of competence, a giant step will have been taken in a realistic approach to computer literacy.

Conclusion

With the likelihood of financial support at various governmental levels, it is probable that most schools may eventually secure enough hardware and software to cause significant change in the school curriculum. Until this occurs, much progress might be made in fostering teacher and student awareness, and planning for proper selection of equipment and materials. Although the hands-on experience is essential, prior preparation is needed for successful implementation of all aspects of this technology.

Evidence indicates that the microcomputer can be an effective learning device when high quality software is used in a planned sequence of learning. Although this is a widely accepted belief by knowledgeable individuals, there is still the need for caution and prudence in the initiation of this new technology. A school should be sure it can afford a microcomputer system and its accompanying software without draining already strained budget items. Purchases that sacrifice other areas thereby lowering the quality of instruction are not acceptable. Clear objectives must be established in the integration of the microcomputer and its accompanying technology. Proper teacher training in utilization of the equipment and preview of software is imperative. Rational planning in the initial stages can help prevent irreversible decisions that can waste our resources and reduce the quality of the teaching/learning environment.

Bibliography

1. Travis, Fred, "Computer Courses: Fact or Fad," Clarksville Leaf-Chronicle, October 2, 1983, p. 5A.
2. Jansky, J. and Hirsch, K. D., Preventing Reading Failure: Predictions, Diagnosis, Intervention (New York: Harper & Row, 1972).
3. Melzcus, Richard H., The P.D.K. Guide: An Introduction to Micro-computer Literacy for Education, Phi Delta Kappa, Bloomington, Ind., 1983, p. 32.
4. Grady, Tim M., "Software Evaluation Criteria," Computers in Curriculum and Instruction, Association for Supervision and Curriculum Development, Alexandria, Va., 1983, p. 84.
5. Melzcus, op. cit., p. 24.
6. Melzcus, op. cit., p. 33.
7. Pratscher, Sandra K., "Training Teachers to Use the Powerful Tool," Computers in Curriculum and Instruction, Association for Supervision and Curriculum Development, Alexandria, Va., 1983, p. 84.